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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/465,006 | 12/16/1999 | Michael Heckmeier | MERCK-2073 | 8358 |
| 23599 | 7590 | 05/04/2004 | EXAMINER | |
| MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201 | | | WU, SHEAN CHIU | |
| | | ART UNIT | PAPER NUMBER | |
| | | | 1756 | |

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/465,006 | HECKMEIER ET AL. |
| | Examiner Shean C Wu | Art Unit 1756 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 14 November 2003.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 11-36 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 11-36 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 11-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed ratio of the dielectric anisotropies of the liquid-crystal medium parallel and perpendicular to the director is less than or equal to 1.93 raises new matter. Applicants point out that the dielectric constant perpendicular to the molecular axis must be as large as possible (on page 3, lines 27-28) supports the applicant's argument. However, the above statement does not provide the ratio of the dielectric anisotropies of the liquid-crystal medium parallel and perpendicular to the director is less than or equal to 1.93. Applicants fail to disclose the advantage of the newly claimed ratio. The present Examples 2, 6-11 are within claimed range and Examples 1, 3-4 and 12 have ratio large than 1.93. When applicant urges patentability of some advantage over a reference, that advantage should be disclosed in the specification. *In re Rossi*, 241 F.2d 726, 112 U.S.P.Q. 479 (C.C.P.A. 1956). *Ex parte Mac Donald*, 113 U.S.P.Q. 262 (P.O. Bd. App. 1956).

It is noted that Examples pairs 2 and 5, 8 and 13 and 9 and 14 are the same.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 11-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (US 6,210,761).

The reference discloses liquid crystal compounds represented by formula (1), which exhibit not only a negative anisotropy value but also extremely high voltage retention and low threshold voltages, are reduced in the temperature dependence of these properties, are excellent in compatibility with other liquid crystal materials. The liquid crystal composition comprise other suitable compounds are expressed by the general formulae (2)-(12). The suitable compounds and their properties are discussed in the specification. See formulae (2)-(6) on col. 23, lines 40-46 and col. 28, lines 23-51, which have a positive dielectric anisotropy value (corresponding to the present formula II). The general formulae (7)-(9) are correspond to the present formula III (see col. 32, lines 7-22). The general formulae (10)-(12) with left ring being a cyclohexene overlap the claimed formula 11. See col. 33, line 37 to col. 34, line 7. The compounds and their properties of Examples 25 and 26 are closest to the present claims. The reference differs from the claims in that the claims have more specific components in claimed medium. The claimed medium is not exemplified in the reference. However, the compounds and their concentrate ranges of the formulae III and IIIa-III^d are all disclosed and taught by the reference. With respect to claims 24, 27-28, 30-31 and 33-34, the reference differs from the claims in that the claims have more specific values for the liquid crystal

properties. The reference teaches that compounds expressed by one of the general formulae (7) to (9) have a small absolute value of dielectric anisotropy and are close to neutral and the compounds expressed by the general formula (7) are used principally for the purpose of adjusting viscosity or adjusting optical anisotropy value. The reference further teaches that the compounds expressed by the general formula (8) or (9) are used for the purpose of expanding nematic range such as raising clearing point or for the purpose of adjusting optical anisotropy value. The general formula (10) are two rings compounds, the compounds are used principally for the purpose of adjusting threshold voltage, adjusting viscosity, or adjusting optical anisotropy value. Compounds expressed by the general formula (11) are used for the purpose of expanding nematic range such as raising clearing point or for the purpose of adjusting optical anisotropy value. Compounds expressed by the general formula (12) are used for the purpose of lowering threshold voltage and for the purpose of increasing optical anisotropy value in addition to the purpose of expanding nematic range. Therefore, it would have been obvious to those skilled in the art to substitute the cyclohexyl for phenyl ring in the formula having a 2,3-difluorophenyl core in Examples 25-26 of the reference to arrive at the claimed invention.

With respect to claim 19, the reference differs from the claim in that the claim has three-pole active switch. The active matrix comprising three-pole switching element such as TFT is also known in the art (see US 5,883,686), it would have been obvious to those skilled in the art to use reference liquid crystal materials for the claimed device. Therefore, it would have been obvious to those skilled in the art to utilize the reference

teaching by selecting each component and its properties to meet their needs for the liquid crystal medium such as the claimed invention.

4. Applicant's arguments filed 11/14/03 have been fully considered but they are not persuasive. Applicant argued that a large dielectric constant perpendicular to the molecular axis equates a smaller ratio of the dielectric anisotropies of the liquid-crystal medium parallel and perpendicular to the director. This condition is only true when dielectric constant parallel is fixed. Since the ratio is depended on the two variables, the value of ratio depended on the dielectric constant perpendicular to the molecular axis is inconclusive.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SHEAN C. WU
PRIMARY EXAMINER